	Application No.	Applicant(s)
Notice of Allowability	10/601,338	SEBIRE, BENOIST
	Examiner	Art Unit	
	Brian Young	2819	*A*

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *the amendment filed 10/25/04*.

2. ☒ The allowed claim(s) is/are *1-12*.

3. ☒ The drawings filed on *20 June 2003* are accepted by the Examiner.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some*   c) ☐ None   of the:

       1. ☐ Certified copies of the priority documents have been received.

       2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

       3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

    * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

    (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached

       1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____ .

    (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of

       Paper No./Mail Date _____ .

    Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)

2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)

3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____

4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application (PTO-152)

6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .

7. ☐ Examiner's Amendment/Comment

8. ☒ Examiner's Statement of Reasons for Allowance

9. ☐ Other _____ .

1.   Claims 1-12 are allowed.

2.   The following is an examiner's statement of reasons for allowance: a system for
bit swapping, where periodically I successive bits of a data packet that comprises K bits
are mapped onto interleaved bit positions in I different bursts, according to a predefined
interleaving scheme and a selected interleaving depth 1, including the step of swapping
the value of at least one bit that is associated with a respective first bit position m in the
data packet with the value of a bit that is associated with a respective second bit
position n in the data packet, and where the second bit position n is selected such that n
> m holds and that the difference n-m is divisible by 1, has, not been shown in the prior
art of record.

       Any comments considered necessary by applicant must be submitted no later
than the payment of the issue fee and, to avoid processing delays, should preferably
accompany the issue fee. Such submissions should be clearly labeled "Comments on
Statement of Reasons for Allowance."

3.   The prior art made of record and not relied upon is considered pertinent to
applicant's disclosure. Brink discloses channel coding used to make the transmitted
digital information signal more robust against noise. For this the information bit
sequence is encoded at the transmitter by a channel encoder and decoded at the
receiver by a channel decoder. In the encoder redundant information is added to the
information bit sequence in order to facilitate the decoder to perform error correction. In
a systematic channel-encoding scheme the redundant information is added to the
information bit sequence just as additional inserted, `coded` bits. Hence, the encoded

signal consists of both information and coded bits. In a non-systematic encoding scheme the outgoing bits are all coded bits, and there are no `naked` information bits anymore. The number of incoming bits (information bits) to the encoder is smaller than the number of outgoing bits (information bits plus inserted coded bits, or all coded bits). The ratio of incoming/outgoing bits is called the `code rate R`. For example, prominent channel codes are block codes and convolution codes; the latter ones can be recursive or non-recursive.

Lee et al disclose the position-dependant property of the bit error rate (BER), caused by proximity to the training symbols and symbol asymmetry, to greatly improve the reliability of fields that carry preferred information, e.g., header symbols/bits while minimally impacting the decoded data BER. The header bits are first mapped to an information burst in close proximity to a training sequence. The remaining information to be communicated, e.g., data bits, is then mapped to the information burst. Header bits mapped to bit locations having a high probability of incurring a bit error are relocated to bit locations occupied by data bits having a low probability of incurring a bit error. The displaced data bits are relocated to bit locations previously occupied by the header bits.

A first group of bits, e.g., header symbols/bits, are interleaved to form a first group of interleaved bits. A second group of bits, e.g., data symbols/bits, are interleaved to form a second group of interleaved bits. The first and second groups of interleaved bits are mapped to an information burst. The first and second groups of interleaved bits may be mapped to the information burst relative to a group of known symbols forming a training
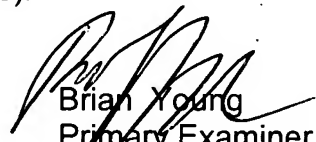
sequence. A disadvantaged bit location, i.e., a bit location within the mapping having a

relative high probability of incurring a bit error, is identified and an advantaged bit

location, i.e., a bit location within the mapping having a relatively low probability of

incurring a bit error, is identified. A first group bit from the first group of interleaved bits

mapped to the disadvantaged bit location is remapped to the advantaged bit location

while a second group bit from the second group of interleaved bits mapped to the

advantaged bit location is remapped to the disadvantaged bit location.

4.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Brian Young whose telephone number is 571-272-1816.

The examiner can normally be reached on Mon-Fri 7:30-4:00.

       If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Mike Tokar can be reached on 571-272-1812. The fax phone number for

the organization where this application or proceeding is assigned is 703-872-9306.

       Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

Brian Young
Primary Examiner
Art Unit 2819